

**RECEIVED**  
**CENTRAL FAX CENTER**  
**MAY 31 2005**

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respective one of the first crosspoint switch outputs, each of the second crosspoint switch outputs configured to couple to one or more second output devices, the second crosspoint switch operable to switchably couple any of the plurality of N second crosspoint switch inputs to any one or more of the plurality of second crosspoint switch outputs; and

a plurality of second band translation devices, each having an input coupled to a respective one of the second crosspoint switch outputs and an output configured to couple to one or more second output devices, each of the one or more second band translation devices operable to pass one or more channels as supplied thereto, or to frequency translate one or more of the channels as supplied to respective one or more channels,

wherein the outputs of at least two of the plurality of second band translation devices are coupled together, and at least a portion of the second crosspoint switch or at least a portion of one or more of the plurality of second band translation devices comprises a differential signal path.

59 109. (currently amended) The apparatus of claim 58 108, wherein the second crosspoint switch and the plurality of second band translation devices are included within a second integrated circuit.

60 110. (currently amended) The apparatus of claim 58 108, wherein the coupled output of the two or more second band translation devices is configured to couple to a single second output device.

64 111. (currently amended) The apparatus of claim 58 108, wherein the output of at least one of the second band translation devices is configured to couple to a plurality of second output devices.

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62 112. (currently amended) The apparatus of claim 58 108, wherein the output of at least one of the first band translation devices is coupled to at least one output of the second band translation devices.

63 113. (currently amended) The apparatus of claim 58 108, further comprising a second signal combiner having (i) a plurality of inputs coupled to respective plurality of second band translation device outputs, and (ii) an output coupled to one or more second output devices, said output comprising the coupled output of the two or more band translation devices.

64 114. (currently amended) The apparatus of claim 63 113, further comprising a respective plurality of second filters, each respective second filter coupled between a second band translation device output and a second signal combiner input.

65 115. (currently amended) The apparatus of claim 58 108, further comprising a plurality of second variable gain amplifiers coupled to the second crosspoint switch, each of the plurality of second variable gain amplifiers operable to apply gain or attenuation to a signal input thereto.

66 116. (currently amended) The apparatus of claim 65 115, wherein the second crosspoint switch, the plurality of second band translation devices, and the plurality of second variable gain amplifiers are included within a second integrated circuit.

67 117. (currently amended) In a signal distribution system having a crosspoint switch having N inputs operable to receive a respective plurality of N signals and a plurality of crosspoint switch outputs, a respective plurality of band translation devices coupled to the crosspoint switch outputs, and one or more output devices coupled to at least one of the plurality of band translation devices, a method for distributing one or more channels included within any one of the plurality of N received signals to the one or more output devices, the method comprising:

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receiving a plurality of N signals into the crosspoint switch, the crosspoint switch input having a respective plurality of N inputs, wherein one or more channels included within a first of the N signals overlaps in frequency one or more channels included within a second of the N signals;

selectively switching the crosspoint switch, whereby any of the plurality of N received signals is coupled to any one or more of the crosspoint switch outputs;

supplying one or more crosspoint switch output signals to respective band translation devices, each of the one or more crosspoint switch output signals including one or more channels;

controlling one or more of the plurality of the band translation devices either to pass the one or more channels as supplied therethrough, or to frequency translate one or more of the channels as supplied to respective one or more channels; and

outputting the pass-thru or frequency-translated channels to one or more output devices operable to render the one or more channels supplied thereto,

wherein at least a portion of the crosspoint switch or at least a portion of one or more of the plurality of band translation devices comprises a differential signal path.

~~68~~ 118. (currently amended) The method of claim ~~67~~ 117, wherein said crosspoint switch comprises the only crosspoint switch operable to distribute, to the one or more coupled output devices, one or more channels included within any of the plurality of N received signals.

~~69~~ 119. (currently amended) The method of claim ~~67~~ 117, wherein at least one of the N received signals comprises a plurality of frequency bands.

~~70~~ 120. (currently amended) The method of claim ~~67~~ 117, wherein:

one or more channels are grouped into a frequency band; and

controlling comprises frequency translating the one or more channels to the same frequency band.

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~~74~~ 121. (currently amended) The method of claim ~~67~~ 117, wherein:  
one or more channels are grouped into a frequency band; and  
controlling comprises frequency translating the one or more channels to a  
different frequency band.

~~72~~ 122. (currently amended) The method of claim ~~67~~ 117, wherein:  
one or more channels are grouped into a frequency band; and  
controlling comprises passing through the one or more channels through the  
band translation device.

~~73~~ 123. (currently amended) The method of claim ~~67~~ 117, further comprising  
combining the one or more frequency-translated channels with one or more pass-  
through channels to provide a composite signal.

~~74~~ 124. (currently amended) The method of claim ~~67~~ 117, further comprising  
combining the one or more frequency-translated channels with one or more additional  
frequency-translated channels to provide a composite signal.

~~75~~ 125. (currently amended) The method of claim ~~72~~ 122, further comprising  
combining the one or more pass-through channels with an additional one or more pass-  
through channels to provide a composite signal.

~~76~~ 126. (currently amended) The method of claim ~~67~~ 117, wherein outputting the pass-  
thru or frequency-translated channels comprises outputting each of the pass-thru or  
frequency-translated channels onto a single line coupled to each of the one or more  
output devices.

~~77~~ 127. (currently amended) The method of claim ~~67~~ 117, wherein outputting the pass-  
thru or frequency-translated channels comprises:  
outputting one or more first pass-thru or frequency-translated channels onto a  
first line coupled to a first of the one or more output devices; and

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outputting one or more second pass-thru or frequency-translated channels onto a second line coupled to a second of the one or more output devices.

~~78~~ 128. (currently amended) The method of claim ~~67~~ 117, wherein controlling comprises:

upconverting at least one of the channels from the first frequency to an intermediate frequency; and

downconverting the at least one of the channels from the intermediate frequency to the second frequency.

~~79~~ 129. (currently amended) The method of claim ~~67~~ 117, wherein controlling comprises:

downconverting at least one of the channels from the first frequency to an intermediate frequency; and

upconverting the at least one of the channels from the intermediate frequency to the second frequency.

~~80~~ 130. (currently amended) The method of claim ~~79~~ 129, wherein downconverting comprises downconverting the at least one channel to baseband.

~~84~~ 131. (currently amended) The method of claim ~~67~~ 117, further comprising filtering the pass-through or frequency-translated band of channels.

~~82~~ 132. (currently amended) The method of claim ~~67~~ 117, wherein frequency translating comprises either (i) downconverting one or more of the channels from a first frequency to the second frequency, or (ii) up converting one or more of the channels from a first frequency to a second frequency.

~~83~~ 133. (currently amended) The method of claim ~~67~~ 117, further comprising variably adjusting a power level of either: ~~(i) one or more of the N signals, (ii) at least one~~

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~~received signal output from the crosspoint switch, or (iii) one or more of the N signals prior to input to respective N crosspoint switch inputs and at least one received signal output from the crosspoint switch.~~

84 134. (currently amended) The method of claim 83 133, wherein variably adjusting a power level comprises attenuating one or more of the N signals in (i), (ii), or (iii).

85 135. (currently amended) The method of claim 83 133, wherein variably adjusting a power level comprises amplifying one or more of the N signals in (i), (ii), or (iii).

86 136. (currently amended) The method of claim 67 117, further comprising:  
receiving the plurality of the N signals into a second crosspoint switch, the second crosspoint switch input having a respective plurality of N inputs, wherein one or more channels included within a first of the N signals overlaps in frequency one or more channels included within a second of the N signals;  
selectively switching the second crosspoint switch, whereby any one of the plurality of N received signals is coupled to any one or more of the second crosspoint switch outputs;  
supplying one or more second crosspoint switch output signals to respective second band translation devices, each of the one or more second crosspoint switch output signals including one or more channels;  
controlling one or more of the plurality of the second band translation devices either to pass one or more channels as supplied thereto, or to frequency translate one or more of the channels as supplied to respective one or more channels; and  
outputting the pass-thru or frequency-translated channels to one or more second output devices operable to render the one or more channels supplied thereto,  
wherein at least a portion of the second crosspoint switch or at least a portion of one or more of the plurality of second band translation devices comprises a differential signal path.

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~~87~~ 137. (currently amended) An apparatus for distributing one or more channels included within each of a plurality of N satellite IF signals to one or more output devices, the apparatus comprising:

a crosspoint switch having a plurality of N crosspoint switch inputs and a plurality of crosspoint switch outputs, each of the N crosspoint switch inputs coupled to receive one of the N satellite IF signals, the crosspoint switch operable to switchably couple any of the plurality of N crosspoint switch inputs to any one or more of the plurality of crosspoint switch outputs, wherein one or more channels included within a first of the N satellite IF signals overlaps in frequency one or more channels included within a second of the N satellite IF signals; and

a plurality of band translation devices, each having an input coupled to a respective one of the crosspoint switch outputs and an output configured to couple to one or more output devices, each of the one or more band translation devices operable to pass one or more channels as supplied thereto, or to frequency translate one or more of the channels as supplied to respective one or more channels,

wherein the outputs of at least two of the plurality of band translation devices are coupled together, and at least a portion of the crosspoint switch or at least a portion of one or more of the plurality of band translation devices comprises a differential signal path.

~~88~~ 138. (currently amended) The apparatus of claim ~~87~~ 137, wherein the one or more channels included within one or more of the N satellite IF signals comprises respective one or more frequency division multiplexed channels, each of the one or more frequency division multiplexed channels having a different carrier frequency.

~~89~~ 139. (currently amended) The apparatus of claim ~~87~~ 137, wherein the one or more channels included within one or more of the N satellite IF signals comprises at least one multiplexed channel, the multiplexed channel operating at a predetermined carrier frequency and comprising the content of two or more channels.

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90 140. (currently amended) The apparatus of claim 89 139, wherein the content of the two or more channels comprises digital content, and wherein the multiplexed channel comprises a multiplexed digital channel.

94 141. (currently amended). The apparatus of claim 87 137, wherein at least one of the N satellite IF signals comprises a plurality of frequency bands.

92 142. (currently amended) The apparatus of claim 87 137, wherein the crosspoint switch and the plurality of band translation devices are included within an integrated circuit.

93 143. (currently amended) The apparatus of claim 87 137, wherein two or more band translation devices are coupled to the same local oscillator source.

94 144. (currently amended) The apparatus of claim 87 137, wherein two or more band translation devices are coupled to different variable local oscillator sources.

95 145. (currently amended) The apparatus of claim 87 137, wherein the output of each one of the band translation devices is configured to couple to a single output device.

96 146. (currently amended) The apparatus of claim 87 137, wherein the outputs of the two or more band translation devices are configured to couple to a single output device.

97 147. (currently amended) The apparatus of claim 87 137, wherein the output of at least one of the band translation devices is configured to couple to a plurality of output devices.



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98 148. (currently amended) The apparatus of claim 87 137, further comprising a signal combiner having (i) a plurality of inputs coupled to respective plurality of band translation device outputs, and (ii) an output coupled to one or more output devices.

99 149. (currently amended) The apparatus of claim 98 148, wherein the output of the signal combiner is coupled to each of the one or more output devices.

400 150. (currently amended) The apparatus of claim 98 148, wherein the output of the signal combiner is coupled to a first subset of the one or more output devices, the apparatus further comprising a second signal combiner having a plurality of inputs coupled to respective plurality of band translation device outputs, and an output coupled to a second subset of one or more output devices.

404 151. (currently amended) The apparatus of claim 98 148, further comprising a respective plurality of filters, each respective filter coupled between a band translation device output and a signal combiner input.

402 152. (currently amended) The apparatus of claim 404 151, wherein the plurality of filters are selected from the group consisting of a high pass filter, a lowpass filter, a bandpass filter, and a diplexer.

403 153. (currently amended) The apparatus of claim 404 151, wherein the plurality of filters are implemented separately from the crosspoint switch.

404 154. (currently amended) The apparatus of claim 404 151, wherein the plurality of filters, the crosspoint switch and the plurality of band translation devices are monolithically formed on an integrated circuit.

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405 155. (currently amended) The apparatus of claim 87 137, further comprising a plurality of variable gain amplifiers coupled to the crosspoint switch, each of the plurality of variable gain amplifiers operable to apply gain or attenuation to a signal input thereto.

406 156. (currently amended) The apparatus of claim 405 155, wherein each of the plurality of variable gain amplifiers comprises an input coupled to receive a respective one of the N satellite IF signals, a control input, and an output coupled to one of the inputs of the crosspoint switch, wherein each of the variable gain amplifiers is operable, responsive to a control signal received at the control input, to apply gain or attenuation to a signal input thereto.

407 157. (currently amended) The apparatus of claim 406 156, further comprising a respective plurality of detectors, each detector having an input coupled to the input of one variable gain amplifier and an output coupled to the control port of said variable gain amplifier, each of the detectors operable to control the gain or attenuation level of the variable gain amplifier as a function of the power detected.

408 158. (currently amended) The apparatus of claim 406 156, further comprising a respective plurality of detectors, each detector having an input coupled to the output of one variable gain amplifier and an output coupled to the control port of said variable gain amplifier, each of the detectors operable to control the gain or attenuation level of the variable gain amplifier as a function of the power detected.

409 159. (currently amended) The apparatus of claim 406 156, wherein the crosspoint switch, the plurality of band translation devices, and the plurality of variable gain amplifiers are included within an integrated circuit.

410 160. (currently amended) The apparatus of claim 87 137, further comprising at least one LNB converter operable to provide a respective at least one of the N satellite IF signals.

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444 161. (currently amended) An apparatus for distributing one or more channels included within each of a plurality of N satellite signals to one or more output devices, the apparatus comprising:

a first LNB unit operable to receive a plurality of the N satellite signals, the first LNB unit comprising:

a first LNB converter coupled to receive a plurality of the N satellite signals and operable to produce a plurality of first satellite IF signals;

a first crosspoint switch having a plurality of first crosspoint switch inputs coupled to receive respective first satellite IF signals and a plurality of first crosspoint switch outputs, the first crosspoint switch operable to switchably couple any of the first crosspoint switch inputs to any one or more of the first crosspoint switch outputs; and

respective plurality of first band translation devices, each first band translation device having an input coupled to a respective one of the first crosspoint switch outputs and an output configured to couple to one or more output devices, each of the first band translation devices operable to pass one or more channels as supplied thereto, or to frequency translate one or more of the channels as supplied to respective one or more channels, wherein the outputs of the first band translation devices are coupled together to provide a first LNB unit output,

wherein at least a portion of the first crosspoint switch or at least a portion of one or more of the plurality of first band translation devices comprises a differential signal path;

a second LNB unit operable to receive a plurality of the N satellite signals, the second LNB unit comprising:

a second LNB converter coupled to receive a plurality of the N satellite signals and operable to produce a plurality of second satellite IF signals;

a second crosspoint switch having a plurality of second crosspoint switch inputs coupled to receive respective second satellite IF signals and a plurality of second crosspoint switch outputs, the second crosspoint switch operable to switchably couple any of the second crosspoint switch inputs to any one or more of the second crosspoint switch outputs; and

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respective plurality of second band translation devices, each second band translation device having an input coupled to a respective one of the second crosspoint switch outputs and an output configured to couple to one or more output devices, each of the second band translation devices operable to pass one or more channels as supplied thereto, or to frequency translate one or more of the channels as supplied to respective one or more channels, wherein the outputs of the second band translation devices are coupled together to provide a second LNB unit output;

wherein at least a portion of the second crosspoint switch or at least a portion of one or more of the plurality of second band translation devices comprises a differential signal path, and

a signal combiner having inputs coupled to receive the first and second LNB unit outputs and an output coupled to one or more output devices.